ESTIMATING THE IMPACT OF FOREIGN DIRECT INVESTMENT ON ECONOMIC GROWTH IN ALGERIA

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ABSTRAK

Kajian ini menganggar kesan *pelaburan langsung asing* (FDI) ke atas pertumbuhan ekonomi di Algeria. Kesan FDI ini dianggar dan hubungan sebab-akibat antara FDI dan pertumbuhan ekonomi dinilai dengan menggunakan data tahunan dari 1990 hingga 2013. Hasil dapatan menunjukkan bahawa dalam jangka masa panjang, FDI tidak mempunyai kesan yang signifikan ke atas pertumbuhan ekonomi. Tetapi, terdapatnya hubungan sebab-akibat dari FDI ke pertumbuhan ekonomi dalam jangka masa pendek. Ini mungkin disebabkan hakikat bahawa ekonomi Algeria terlalu bergantung kepada minyak dan tiada persekitran yang konduktif untuk pelabur-pelabur asing.

Kata kunci: FDI, pertumbuhan ekonomi, hubungan sebab-akibat, Algeria.

ABSTRACT

This study estimates the impact of foreign direct investment (FDI) on economic growth of Algeria. Using an annual data from 1990 to 2013, the impacts of FDI are estimated and the short run causality relationship between FDI and economic growth are evaluated. Results reveal that in long run, the FDI does not have a significant impact on economic growth. However, there is a short run causal relationship from FDI to economic growth. This may due to the fact that the Algerian economy is heavily relying on crude oil and the absence of a conductive environment for foreign investors.

Keywords: FDI, economic growth, causality relationship, Algeria.

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TABLE OF CONTENTS

Title Page

PERMISSION TO USE i

ABSTRACT iii

ACKNOWLEDGEMENT iv

TABLE OF CONTENTS v

LIST OF TABLES viii

LIST OF FIGURES ix

LIST OF APPENDICES x

LIST OF ABBREVIATIONS xi

CHAPTER ONE INTRODUCTION 1

1.1 Background of Study 1

1.2 The Problem Statement 4

1.3 Research Questions 6

1.4 Objective of the Study 6

1.5 Scope of the Study 6

1.6 Significance of the Study 7

1.7 Organization of the Study 7

CHAPTER TWO A BRIEF REVIEW TO ALGERIAN ECONOMY 9

2.1 Introduction 9

2.2 Algeria Economic Overview 9

2.3 The Structure of the Economy 14

Economic Indices Overview 14

Employment 17

Public investment 18

Gross Fixed Capital Formation 19

CHAPTER THREE 22

3.1 Introduction 22

3.2 Economic Growth and FDI Algeria: 22

3.3 FDI and Endogenous Growth 39

3.4 Conclusion 40

CHAPTER FOUR DATA AND METHODOLOGY 42

4.1 Introduction 42

4.2 Data 42

4.3 Model Specification 43

Foreign Direct Investment (FDI current LCU) 45

GDP per capita (current LCU) 45

Total labor force 45

Gross Fixed Capital Formation (GFCF current LCU) 46

4.4 Model Estimation 47

4.4.1 Unit Root Test 48

4.4.2 Co-integration Test 50

4.4.3 Granger Causality Tests 52

CHAPTER FIVE RESULTS 54

5.1 Introduction 54

5.2 Unit root and Cointegration tests 54

5.3 Multiple regression models 56

5.3.1 Model 1: (GDP Model) 57

5.3.2 Model 2: (GFCF Model) 57

5.3.3 Model 3: (FDI Model) 58

5.4 Granger Causality 58

CHAPTER SIX DISCUSSIONS AND CONCLUSION 60

6.1 Introduction 60

6.2 Major Findings and Policy Implications 60

6.3 Limitations of the Study 62

6.4 Suggestion for Future Research 63

REFERENCES 64

LIST OF TABLES

Page

Table 1.1: GDP per capita (%), Real GPD and Real GDP (except hydrocarbons).....2

Table 2.1: Algerian demographic information.....20

Table 2.2: Algerian economics statistics.....21

Table 5.1 Unit Root test.....54

Table 5.2 Co-integration test.....55

Table 5.3 The estimated multiple regression models.....56

Table 5.4 Granger Short Run Causality.....59

LIST OF FIGURES

Page

Figure 1.1 Growth Domestic Product per capita (current LCU).....2

Figure 1.2: Foreign Direct Investment (FDI) in Algeria 1990 – 2013.....3

LIST OF APPENDICES

Page

Appendix A : GDP Model.....69

Appendix B : GFCF Model.....71

Appendix C : FDI Model 73

LIST OF ABBREVIATIONS

IMF	International Monetary Fund
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GFCF	Gross Fixed Capital Formation
ONS	Office of National Statistics
DA	Dinnar Algerian

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

The beginning of first decade of the 21st century was exceptionally positive for the Algerian economy. From the 2000s till nowadays, the Algerian economy recovered well since the big socioeconomic crisis in 1990s. This recovery is shown with the yearly average growth from 2000 to 2009, of 3.7 and 5.6 percent for real GDP and non-hydrocarbon GDP respectively, while real GDP per head increased by 22 percent, and unemployment decreased from 29.5 percent in 2000 to 10.2 percent in 2009 (IMF Country Report, 2011).

The reason behind this remarkable achievement was an ideal worldwide macroeconomic environment checked by high oil prices, and reasonable macroeconomic strategies that brought about vast financial surpluses and expanding foreign exchange reserves. Regardless of the advancement made, the economy remains greatly reliant on the hydrocarbon area (98 percent of exports), private investment is excessively little, and a frail business climate remains a big obstacle for investment-led economic development. (IMF Country Report, 2011).The Algerian economy has achieved a real growth of around 2.8% (2013), a slight deceleration as compared to 3.3% of 2012. This slowdown is explained by a decline registered in the hydrocarbon sector and lower growth rates in the industry and

construction, public works and hydraulics. (Bâtiment, des Travaux Publics et de l'Hydraulique, 2012).

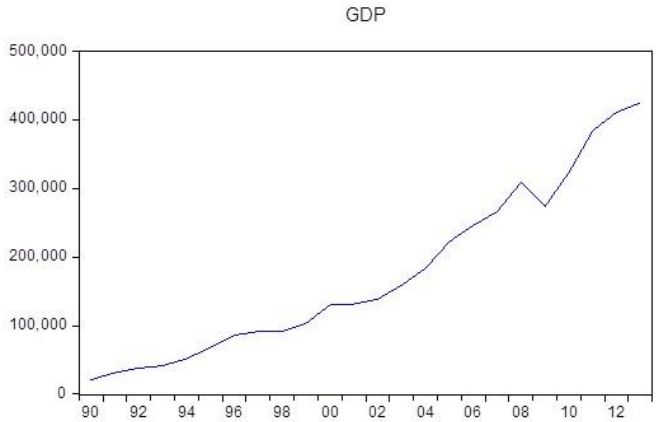
At current values, the GDP is estimated at Dinnar Algerian (DA) 16 569.3 billion in 2013 while in 2012, was DA 16115.4 billion, a nominal growth rate of 2.8% and an implicit deflator 0.1%. The GDP growth rate excluding oil experienced stability between 2012 and 2013 and is located at a very significant level (7.1%). Table 1.1 below shows the evolution of the growth rate (%) from 2000 to 2013.Figure 1.1 presents the time series plot of GDP per capita which is displaying an increasing trend over time.

Table 1.1: *GDP per capita (%), Real GPD and Real GDP (except hydrocarbons)*

	00	01	02	03	04	05	06	07	08	09	10	11	12	13
GDP per capita (%)	4.1	3.1	5.8	7.7	4.5	6.4	1.5	3.4	2.0	1.0	3.3	2.4	3.1	2.5
Real GPD (%)	3.8	3.0	5.6	7.2	4.3	5.9	1.7	3.4	2.4	1.6	3.6	2.8	3.3	2.8
Real GDP (except hydrocarbons)	3.8	6.2	6.5	6.6	5.0	6.0	5.4	7.0	6.7	9.6	6.3	6.1	7.1	7.1

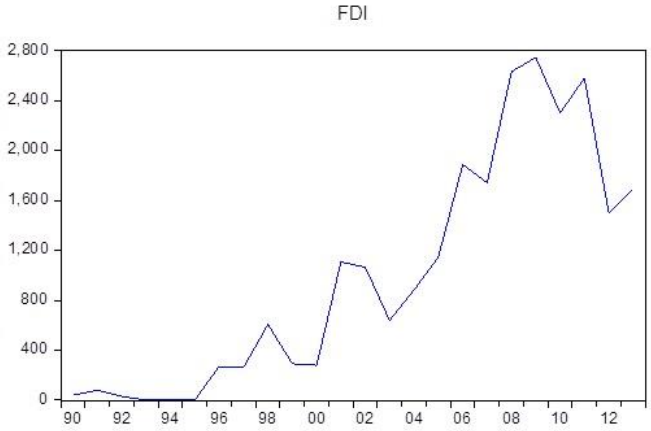
Source: ONS, Algeria

Figure 1.1 Growth Domestic Product per capita (current LCU)



Relating to the foreign direct investment (FDI) in Algeria, it is obvious as shown in Figure 1.2 that the evolution of FDI flows to Algeria during period 1990 to 2000 have a very low flow into local economy because of the absence of the national security. And which not encourage foreign investors to enter and invest in Algeria. While the security set up in Algeria after 2003 till 2013 we can read from the line graph that Algeria has been able to invite and encourage a huge amount of FDI. Nevertheless, the last five year (2009-2013), FDI is showing a decreasing trend.

Figure 1.2: Foreign Direct Investment (FDI) in Algeria 1990 – 2013



Thus, it is clear that economic growth and FDI in Algeria might closely related (as both displaying increasing trend over time) except recently, it appears that the decreasing of FDI is observed with an increasing economic growth. As such, the impact of FDI on economic growth needs to be further investigated quantitatively.

1.2 The Problem Statement

Even with the reform policies made by the Algerian government to push the economic development forward, in the unstable world financial system and economic environment, it has become more and more complex for Algeria to achieve a good rate of economic growth. An updated study on the determinants of economic growth in Algeria is need to help a better formulation of policies to stimulate economic growth, especially on the influence of foreign direct investment.

According to the previous studies, the role of foreign direct investment on economic growth as well as the role of Gross Fixed Capital Formation led- growth plus labor and capital led- growth (i.e., labor, capital, and Gross Fixed Capital Formation), are very important to all of developed and developing countries to diagnostic their economy's status, especially in the side of knowing the trend of economic growth. De Mello (1999) found that the economic growth may have affected by foreign direct investment (FDI) directly. This is because FDI transfers new technologies into host countries and engages to capital accumulation. In the similar context, Algeria also aims to stimulate more investments in its industries and other economic sectors rather than in the petroleum sector. This encourages the government to establish new Investment code, on 20 August 2001.

Moreover, the effect of FDI on economic growth can be indirectly further enhanced by the transfer of technology in the stock of knowledge at the host country. It can be shown through skill acquisition, worker training, organizational behaviors and staff

management activities. In addition, some studies conclude that FDI, in the received economy, it increases capital accumulation by establishing new inputs and technologies (Dunning, 1993; Blomstrom et al., 1996; Borensztein et al. 1998).

There are some studies suggest that the benefit of FDI varies across different countries due to a different conditions among the countries. Carkovic and Levine (2006) found that local conditions, like the educational system of country's population and domestic financial stock have been lead to different benefits of FDI. This finding is supported by Hermes and Lensink (2003), Durham (2004), and Alfaro, Chanda, Kalemli-Ozcan Sayek (2004) such that countries with a good financial market able to gain more benefit from FDI.

Most of the previous studies analyze the effects of capitals, labor, Gross Fixed Capital Formation and FDI on economic growth, separately. It is only a few empirical studies done to investigate the relationship among capital, labor, Gross Fixed Capital Formation and foreign direct investment on economic growth simultaneously. To my knowledge, the available literature on Algeria in terms of the issue discussed it has been not quite enough and studies have different methodology which most of the studies rely on qualitative discussion far from using econometric tools and tests.

1.3 Research Questions

Based on the above problem statements, the following research questions are formulated:

i. What is the impact of Foreign Direct Investment on economic growth in Algeria?
ii. What is the impact of Gross Fixed Capital Formation on economic growth in Algeria?
iii. What is the short-run causality relationship among FDI, GFCF and GDP in Algeria?

1.4 Objective of the Study

The purpose of this study is to estimate the impact of FDI and GFCF on economic growth in Algeria. The specific objectives of this study are:

i. To examine the impact of FDI on economic growth.
ii. To examine the impact of GFCF on economic growth
iii. To examine the short run causal relationship among Gross Fixed Capital Formation (GFCF), foreign direct investment and economic growth.

1.5 Scope of the Study

The scope of this study confines to the period of 1990 to 2013,in Algeria Economic growth is defined as Gross Domestic Product (GDP); FDI is defined as Foreign

Direct Investment; GFCF is defined as Gross Fixed Capital Formation; Labor is defined as the total labor force; and K is defined as Capital.

1.6 Significance of the Study

Foreign Direct Investments consider as a main determinant of the circle of the economic development. FDI has one of the most factors may lead to accelerate economic growth. But even though there is a big debate about the FDI benefits among developing and developed nations (OECD, 1991). Moreover, in one of the comparison case between Foreign Direct Investments and Domestic Investments On other words, between multinational firms and local firms. The contribution of FDI to economic growth leads production to be more than the local investments made by local firms. In addition local investments have a significant contribution on economic growth as well. Understanding on the impact of FDI on economic growth and its causality relationship with economic growth will provide a valuable input for a better policy formulation in Algeria. For instance, the findings of this study will shed a light to assist the policy maker and guide them in take a good economic decisions and apply a right and useful policy which can lead economic to be stable in Algeria.

1.7 Organization of the Study

This paper contains five chapters. It opens with chapter one, discussing the statement of problem, objectives, scope, and organization of the paper. The paper aims to highlight the relationship between the main variables under this study which

are Foreign Direct Investment, Gross Fixed Capital Formation and economic growth in Algeria.

Chapter two is about economic background in Algeria, which is an overview of economic growth, and country's foreign direct investment (FDI) and other economic indicators of Algeria during certain periods. While chapter three presents a comprehensive Literature Review survey of the previous studies on the relationships between economic growth, domestic investment, capital, labor and foreign direct investment. Chapter four exhibits the model specification and estimation method and also, the source of variables data collected from different reliable sources by using time series from 1990 to 2013. The results of estimation and their interpretation of the findings have been discussed in chapter five, it estimated by using Ordinary Least Square (OLS) and Granger Causality tests. While we obtain results we will discuss it and interpret it at the chapter six.

In the final, the chapter six provides the summary of this study and shows their implications, which help the policy maker to adjust economic status and researchers to research about these economic phenomena in the future.

CHAPTER TWO

A BRIEF REVIEW TO ALGERIAN ECONOMY

2.1 Introduction

This chapter is about economic background of Algeria, which are an overview of economic growth and other economic indicators of Algeria during certain periods.

2.2 Algeria Economic Overview

Algeria has made a major policy changes due to the Arab Spring, and it has managed to maintain economic and social stability despite the unrest in the region. In view of the presidential election in 2014, the main economic issues long-term concern for the government reduced subsidies, improving the business environment, diversification of the economy and job creation in the private sector.

A new government place in September 2012 and headed by the Prime Minister continued implementation of the development plan 2009-2014 which focuses on public investment in infrastructure , housing and social services, as well as job creation and diversification of the economy. This made Algeria as the attractive country for foreign investors.

Nowadays, the world economy becomes weak and more complicated especially with the fallen prices of oil and the expected financial crisis. Obviously the performance of the Algerian economy has been affected. On the one hand, the

country has recorded positive growth based on average 2.7% in 2011-2012 and 3.328 % in the year of 2013. It is because the expansion of 5.8% in the non-hydrocarbon sectors in which infrastructure development and agriculture have contributed. All sectors grew during this period, with the exception of the oil sector. where production has been declining since 2006 GDP per capita reached 5,559 dollars in 2012 surpassing its 2008 peak ($ 4 967) . Inflationary pressures, which are largely result of an expansionary fiscal policy (intended to face with the impact of the crisis in Europe and contain social pressures). It seems to have disappeared this year. However, the rapid decline in production and exports of oil led to a sharp reduction in the external current account surplus, and if this trend continues, it will weigh heavily on the budget of the State.(ONS, Algeria)

The Algerian economy depends to a large part of the oil sector. This represents about one-third of GDP and 98 % of its exports. Although oil production is declining, energy consumption at the national level is rising. In addition, poor business climate - marked by difficult access to credit, a complex regulatory environment and excessively lengthy procedures for creating and running a business - hampers private sector development. Unemployment has stabilized at 10% since 2010, although it strikes more heavily youth (21.5%) and women (17.2 %). (ONS, Algeria)

The integration of the countries in world trade process evolves very slowly and negotiations for its accession to the WTO have not made much progress. On the fiscal side, the adoption of expansionary policies helped the economy to recover, but

still have increased deficits (which reached a peak of 5.2 % of GDP in 2012). While, Public spending was about 42 % of GDP over the past two years, partly due to an increase in the budget allocated to the investment program ($ 280 billion programmed for the period 2010-2014) but mainly due to a dramatic increase in spending on wages and transfers, which amounted to 9% of GDP between 2009/2010 and 2012.

Its aim is to support the employment and housing. In 2011, the public sector wages increased by approximately 46%, this increase including the large sums paid in respect of wage arrears. Subsidies which account for 16 % of GDP in 2012 continue to weigh on public finances. To stimulate the economy, the government has sought to better exploit its hydrocarbon resources while clearly opting for private sector development through the opening of research centers and the launch of large projects in the fields of transport and housing. On the business environment, the government has created a committee to develop an action plan to help carry out reforms in this area.

In the future and in the absence of necessary reforms, the Algerian economy is likely to be continued slowly growth. Economic diversification and reducing the dependence on the oil sector are essential to ensure a strong and balanced growth. The results of the program of ongoing development of the government have not been up to expectations. A growth model sustainable medium term will require that

improvements be made to the quality of public expenditure, infrastructure and business environment to foster job creation and diversification.

Gross domestic product (GDP) in Algeria rose by 3.1 percent in 2012 over the previous year. And the National Bureau of Statistics (ONS) said that, from 2001 until 2012, the average growth rate of GDP Algeria was 3.8 percent recording of all time by 6.7 percent in December 2003 and a record low of 2.0 percent in December 2006. The local economy is highly dependent on exports of natural gas and oil. It is estimated that budget revenues from hydrocarbons accounted for roughly 60%, and 30% of GDP and more than 95% of export earnings. Algeria has $ 150 billion of foreign exchange reserves and a large stabilization fund. State control over the economy, corruption and bureaucracy continue to hamper the development and diversification of the economy. And the rate of inflation in Algeria was 0.70 percent in November of 2013. The average inflation rate in Algeria achieved 4.51 percent from 2001 to 2013 reaching a record level of all time by 11 percent in April 2012. And the lowest record with 0.10 percent in October 2013. In Algeria, the measurement of the inflation rates was the total decrease or increase in the prices paid by consumers for a standard basket of goods (ONS, Algeria)

After Algeria decided to abandon the system of economic oriented, and to adopt of economic system as required by the market liberalization of economic sectors like the foreign trade sector. Algeria proceeded to reform its trade policy through the adoption of a progressive liberalization of trade to finish the process in the year

1994. And to promote free Business and better integration into the global economy, Algeria has entered into a partnership with The European Union, which entered into start in 2005. However, the Algerian foreign trade statistics indicate a large geographic bias in Import and export towards EU countries, and also the statistics indicate a weak trade of Algeria with the Maghreb countries (Tunisia, Morocco, Libya, Mauritania), and the Group of Arab and African countries. For Algeria trade should be obtain a real geographic distribution and should be oriented and open up more to the Maghreb countries and the Arab and the African continent.

Algeria realized that under the current trading system, there is no great benefit from Trade liberalization without going under the joint of the World Trade Organization, so that joining will allow Algeria to diversify its trading partners and opens its new markets in countries Members, and to ensure their protection of their rights through transaction of export or import, and easily access to Member markets.

However, and despite the start of negotiations of accession to the World Trade Organization with Algeria began in 1987, but they have not been able to get a membership .because of the result of several difficulties facing the path Join. The most important of these difficulties, both parties not consent to make concessions to other party. For example, Algeria refuses to stop supporting for some sectors, especially the agricultural sector.

2.3 The Structure of the Economy

Economic Indices Overview

After a first stage marked the end of the 1960s, the definition and implementation of a national plan for economic and social development based on options socialist orientation, which has planned management of a dominant role of institutions and economic and social state enterprises. The results were significant in terms of creating an industrial base, agrarian reform, and support for basic social needs of the broad popular strata. But insufficient in terms of economic performance came the reform era accelerated for reasons both internal and external, with the first that shock of the crisis in the oil market in 1986.

Today, the country could get out of a series of large shocks, economic and social, and changes in the institutional and economic framework have reached a level which caused a deepening of reflection on desirable new measures to carry to completion the process of modernization of economic structures. A first set of measures has been taken in this direction after the establishment of a new government (September, 2012). This is to overcome the constraints that hinder the full development of natural, human, and economics of the country, which are of a particular size compared to other countries in the Region.

The draft budget law for 2013 can highlight the vision of the state and the key indicators of the current situation and perspectives drawn. The choices are in line

with the implementation of the 2012-2014 (five year plan). With the further rationalization of budgetary expenditure, the decline in current expenditure to less than 12%, and continued investment projects priority. Externally, the context is especially marked by relative recovery indicators of global economy recovery remains fragile, with potential impact on sales and revenue in the country's hydrocarbon and volatile global commodity markets. Agriculture leading to both, increase in the prices of commodities, and risk of difficulties in accessing products.

The estimation indicates that global economic growth could reach 3.9% in 2013, driven mainly by emerging countries (5.9%), while the levels were only 2.3% in the USA and 0.7% in Eurozone. In Algeria, the GDP growth reached 7% in 1977 /79 fell 0.7 % after the oil shock of 1986, reaching 2.3% in 2007/2009, a level lower than twice that of neighboring Morocco and Tunisia. In recent years, we find that the resources mobilized by the state to support growth, estimated at $500 billion, about three times the GDP had a net impact. Generated growth amounted to 2.5% in 2011, 2.6 % in 2012, while the Finance Act 2013 shows a projection equal to 5% overall and 5.3% excluding hydrocarbons. Thus, the results of measurements of reordering the national economic system and public investment programs, ranging in particular to upgrade infrastructure of all kinds, whether they wore a dynamic recovery in economic activity and provided jobs and income for the population, are realized at a pace that can be significantly improved. Actions are under this context to enable the country to develop an ability to transform solid and sustainable growth budget across sectors to change the mode of the national economic system. This can be seen very well in the case of the agricultural sector where progress in diversifying production

and yields, made since 2009. Notably, were higher than those fixed by the contracts performance. It should be noted that the agricultural sector has played a key role recognized in the recent period, which is the dynamic of achieving significant growth rates and relatively more stable, managing to pull the overall growth alongside particular agribusiness. Agricultural production in 2011 representing 8.2% of global GDP and 12.9% of non-oil GDP (Report Bank of Algeria, September, 2012) sees its contribution to national GDP doubled compared to its average value the last four years is 5%, the level was only 4.6% in 2010. For example, in 2009 and 2011, agriculture has registered the highest growth of all sectors. GDP / capita, meanwhile, amounted to $2,172 in 2007/2009, recording an increase of 69% over the year to start the development process (1967-1969). This level is 72% of that of Tunisia, and is 25% better than that of Morocco.

The trend inflation has increased, reaching 7.9% to rise in September 2012, with an estimated 4% by the Finance Act 2013 forecast. Major trends that characterized the domestic market in terms of supply and sale price of fresh produce and wide consumption during the period 2009 to May 2012 are characterized by a steady, diversified and quantities sufficient. Relatively stable prices, compared with the evolution of the average annual inflation rate recorded (4.5%), also characterized this period (ONS, Algeria 2014).

The existence and implementation of the arrangements for the consumer subsidy prices of wheat and milk powder have certainly had the effect of greatly limiting the

increase for the years 2010 and 2011, the rate overall average inflation and the specific food items.

In addition, the potato and scoop products grown in greenhouses, such as tomatoes, have been disrupted during the month of March and beginning of April 2012, due to weather conditions (rain and snow) experienced by the country in February. The situation returned to normal, from the end of April, beginning of May.

This allows us to understand the severity of the concerns of the sectors concerned and supported actions that are carried out under particular policy renewal to overcome these problems , with the action plan to strengthen the organization of courses and attention given to the effective operation of the device called SYRPALAC (control system for agricultural products widely consumed), which began with the strategic products, especially potato, yielded very encouraging results , and will be expanded gradually the various commodities. In addition, a program thus strengthening infrastructure and modernization of the management of the markets was initiated by the Ministry of Commerce and is being implemented (see annex Reports synthesis MARD and the Ministry of Commerce).

Employment

The unemployment rate rose from 29% in 2000 to 23.7% in 2003 to 17.7% in 2004, and 15.3% in 2005, and less than 12% in 2008 /2009. The household surveys carried out by the ONS (last half of 2009, published in July 2010 results) seem to indicate a lack of job security in the private sector, affecting more women, representing 80% of

permanent employees in the public sector, and only 8.8% in the private sector. Support programs initiated by various sectors involved in agriculture and rural development, led to the crystallization of a dynamic growth generating new jobs, benefiting in particular women and young people, whose number is revealed significant

Public investment

The government's investment budget is quite important. It accounted for about 10% of GDP for the period 2000-2004, compared with the rate of 7.3% of GDP for Morocco during the period from 2000 to 2004 and 7.5% for Tunisia for 2001-2003 (Report of IMF 2004, 2005.)This level is high when compared to the world average of less than 4% of GDP in OECD countries, fewer than 5% of GDP in Latin America, and less than 8% of GDP in Asian countries.

During the five year period from 2005 to 2009, spending has increased. Investments in 2005 reached 1.2 trillion dinars, or $ 16 billion. Public investment spending should increase, initially, 16.5% of non-oil GDP in 2004 to 30.3% in 2006, and over 30% in 2007 to fall thereafter to 15.5 % in 2009 (below the level of 2001 to 2003). Given a limited absorption capacity, the concentration of investments at beginning of period could compromise the quality of spending and increase inflation.

As the lead investor, the State has injected 730 billion dinars in the field of infrastructure and socio-cultural, the investment program focusing on the construction of essential public buildings, the development of human resources, improving service public, support for economic activity and housing construction.

Gross Fixed Capital Formation

Gross Fixed Capital Formation (GFCF) in 2013 is the component demand dynamics. Indeed, after the growth rate of 2.9% in 2011 investment rebounded sharply in 2012 and recorded a volume growth of 7.2%, returning to the same higher rate that of 2010 (7%). In 2013, this trend of recovery in investment confirmed as GFCF recorded a growth rate of 8.6%.

This acceleration of the rate of increase in the volume of GFCF is due, among others, an increase of almost 13.8% of the volume of imports of goods Industrial equipment and an increase in capital expenditure the state, although the state capital budget was down sharply in 2013 (-16%), it remains the expenses of the following sectors are increasing rapidly: Economic and administrative infrastructure: 13.7%, Productive services: 8.8% , Agriculture, Water: 6.2%, Education-Training: + 1.2%. ONS, Algeria Report number 670, 2014)

Table 2.1: Algerian demographic information

Category	Information
Population	39.5 million As of January 2014
Age structure	0-14 years: 28.4% (male 5,641,148/female 5,378,207) 15-64 years: 70.6% (male 12,455,378/female 12,242,604) 15-24 years: 17.4% (male 3,451,069/female 3,291,166) 25-54 years: 42.8% (male 8,398,770/female 8,209,634) 55-64 years: 6.2% (male 1,230,865/female 1,186,832 65 years and over: 5.2% (male 931,769/female 1,094,262) (2014 est.)
Ethnic groups	Arab Berber 99%,European less than 1%
Religion	Sunni Muslim (state religion) 99% Christian and Jewish 1%
Natural Resources	petroleum, natural gas, iron ore, phosphates, uranium, lead, zinc

Table 2.2: Algerian economics statistics

Category	Information
GDP (purchasing power parity)	$284.7 billion (2013 est.) $276.2 billion (2012 est.)
GDP - real growth rate	3.1% (2013 est.) 3.3% (2012 est.) 2.6% (2011 est.)
GDP (official exchange rate)	$215.7 billion (2013 est.)
GDP - per capita (PPP)	$7,500 (2013 est.) $7,400 (2012 est.) $7,300 (2011 est.)
GDP - composition by sector	agriculture: 8.3% industry: 61.6% Services: 30.1% (2010 EST.)
Labor force	11.15 million (2013 est.)
Labor force - by occupation	Agriculture: 14% industry: 13.4% construction and public works: 10% trade: 14.6% government: 32% other: 16% (2003 est.)
Unemployment rate	10.3% (2013 est.) 10.7% (2012 est.)
Budget	Revenues: $80.55 billion Expenditures: $85.58 billion (2013 est.)
Budget surplus (+) or deficit (-)	-2.3% of GDP (2013 est.)
Public debt	13.2% of GDP (2013 est.) 8.3% of GDP (2012 est.)
Inflation rate (consumer prices)	3.9% (2013 est.) 8.9% (2012 est.)
Stock of direct foreign investment - at home	$25.02 billion (31 December 2013 est.) $23.26 billion (31 December 2012 est.)
Stock of direct foreign investment - abroad	$2.433 billion (31 December 2013 est.) $2.133 billion (31 December 2012 est.)

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

While this chapter presents a comprehensive Literature Review survey of the previous studies on the relationships between economic growth, Gross Fixed Capital Formation, capital, labor and foreign direct investment.

3.2 Economic Growth and FDI Algeria:

In context of Algeria, some studies found that the relationship between foreign direct investment and Gross Domestic Product in the short-run have no linear relationship such as Shahdy, Sharif, and Lakhal (2005). Moreover, Saida and Hadjer (2008) used the time series data of Algeria from 1982 to 2007. Their aims to discuss the relationship of FDI effect on GDP inside different developing countries. They found that increase of Foreign Direct Investment lead to increase GDP. On other hand their comment on the attractiveness of investment has no encourage to foreign investors.

Abdulhamid Sukar, Syed Ahmed, Seid Hassan (2005), used in his methodology augmented endogenous growth model to analyze the a panel data of Algeria from year of 1975 to 1999. They found that foreign direct investment has marginally significant positive effect on economic growth. While his finding indicates that there is significant positive effect on economic by openness, and domestic investment.

However, Rafik nazary (2008) in the study cover the period of 1990 to 1999 which used in his methodology Ordinary Least Square (OLS). He found that there is a negative relationship effect between Foreign Direct Investment and Gross Domestic Product. However, he found that there is a positive impact between Foreign Direct Investment and Gross Domestic Product during period from 1991 to 2005.

Zenasni Soumia and Benhabib Abderrezak (2013) They examine the relationship between foreign direct investment (FDI), financial integration and economic growth of North African economies, which are Algeria, Tunisia and Morocco. They apply the unit root test and co-integration test and Dynamic panel GMM tests. The study found that FDI plays a positive role in boosting the economic growth of Algeria, Tunisia and Morocco. They suggest that the North Africa countries should reform and union their financial sector, commercial and monetary between them which may help to liberate a trade among them.

There several studies which shed a light on study FDI and its impacts among Mediterranean economies which are Algeria, Morocco, Egypt and Tunisia plus some Arab countries such as Saudi Arabia and Oman.

As part of a study based on data covering six Arab countries (Saudi Arabia, Oman, Morocco, Jordan, Algeria, Tunisia and Egypt) over the period 1978-1998, and Sadik Bulbul (2001) found an effect significantly negative FDI on TFP in the case of Saudi Arabia, Tunisia, and Egypt. For Jordan the effect is statistically insignificant, while for Morocco and Oman, the results are not clear. The two authors explain this by

high vulnerability rate of growth of these two countries to external factors (the volatility of oil prices for Oman and climatic hazards for the Moroccan agricultural sector).

In a study that examined nine countries of the southern basin of the Mediterranean (SEM), and Bouklia Zatla (2001) discussed the evaluation of the effect of FDI on economic growth. They found that FDI is significantly low on the growth of southern Mediterranean economies.

Menegaldo and Moustier (2002) analyzed FDI bilateral flows between Europe and the southern Mediterranean countries between 1985 and 1997.It’s proposed to test the relationship between FDI and trade 'exports and imports ". Their study showed a co-integration relationship in the case of Morocco, Tunisia and Turkey which concluded the existence of a long-term relationship between foreign direct investments on the one hand, and exports and imports, on the other.

Soliman (2003) applied an econometric model of 4 Mediterranean countries (Egypt, Morocco, Tunisia and Turkey) over a period of 23 years from 1975 to 1997, he finds that FDI seems to have a positive effect on manufacturing exports, although this effect is so weak to generate improved export performance.

In an attempt to study the effect of FDI on economic growth, Darrat et al. (2005) conducted a comparative analysis covering 23 countries from two different regions namely North Africa and the Middle East (MENA) and Central and Eastern Europe.

Through estimation by ordinary least double square and using data over the period 1979-2002, they find that FDI inflows stimulate economic growth only in the candidate countries to the EU. While the FDI effect is negative or non-existent in MENA countries and non-candidate countries to the EU. The authors explain this by the contribution of the application to become a member of the EU to create positive effects of FDI on economic growth.

In the same study framework, Meschi (2006) concluded that FDI has no positive effect on economic growth in countries of North Africa and the Middle East. She attributes this to the high concentration of FDI in these countries in the primary sector, particularly the oil sector.

Like these results, despite there tends to affirm the positive link between economic growth and foreign direct investment. The relationship between these two variables is not without ambiguity.

The image given by analyzes that have been performed including the Mediterranean countries more confirms the uncertainty of the positive impact of FDI on economic growth of the countries. This lack of certainty can be explained by the weakness related to the host country on the one hand, and the nature of the other FDI.

In the Middle East region, Metwally (2004) studied the impact of EU FDI on economic growth by developing a simultaneous equations model suggesting that higher rates of economic growth lead to greater foreign capital inflow. The regression findings also indicated that differentials of interest rate significantly

impacts more than the impact of economic growth on the attraction of foreign capital in Egypt. Nevertheless, such variable did not appear to play a crucial role in Oman. Added to this, the simultaneous equation model results show a feedback effect in the economic growth-capital inflow relationship in the entire sample nations. A higher foreign capital inflow results to exports growth in terms of goods and services whereas the exports expansion results in gross national product growth, which turn boosts foreign capital attraction.

3.3 Economic Growth and FDI: Other Countries

In the present study, the researcher conducts a comparative study a group of nations, which may add the contribution to literature. Studies conducted in different countries provide evidence of FDI's major role in economic progress. Nevertheless, majority of studies generally showed that the impact of FDI on growth hinges on other factors like the level of complimentary and substitution between domestic investment and FDI, as well as several other characteristics that are country-specific.

Specifically, Mottaleb (2007) examined the determinants of FDI and its effect on economic growth in the context of developing countries to determine the relationship between FDI and economic growth. He found FDI to affect economic growth in a significant manner. Additionally, Kohpaiboon's (2008) analysis results of the effect of FDI on growth performance in investment receiving nations in the context of Thailand for the period 1920-2000 revealed that the FDI tended to be higher in export promotion trade regime in comparison to import substitution regime. Moreover, Li & Liu (2005) employed a single equation and simultaneous equation

methods when they examined the FDI-economic growth relationship. Their study involved a panel data of 84 countries for the period 1970-1999 and revealed a positive FDI effect on economic growth via its interaction with human capital in the developing nations. They also found a negative effect of FDI on the economic growth via its interaction with the gap in technology.

Meanwhile, Getinet and Hirut (2006) concentrated on FDI in Ethiopia in terms of nature and determinants in the period from 1974-2001. The provided an extensive account of the theoretical explanation of FDI and reviewed the policy regimes, the FDI regulatory framework and the country's institutional set-up over a certain period. The study undertook an empirical analysis to determine the FDI determinants in the country. The findings showed that rate of real GDP growth, export orientation, and liberalization among other factors to positively impact FDI. Contrastingly, macro-economic instability and poor infrastructure negatively impacted FDI. Their findings indicated that trade liberalization and regulatory regimes, stable macroeconomic and political environment and major infrastructure enhancement are all crucial for attracting FDI into Ethiopia.

In a related study, Al-Abdulrazaq and Bataineh (2007) made use of Box-Jenkins method known as the Autoregressive Integrated Moving Average (ARIMA) model to determine FDI inflows into Jordan from 2004-2005. They revealed that FDI experienced an increasing trend over the study period and expected a positive effect

of FDI inflows on varying macroeconomic variables in Jordan's economy. No consensus has been achieved on the dynamic effects as well as steady state of FDI upon growth. While some studies found FDI impact on growth to be significantly heterogeneous across countries with open economies, others found that the causality direction between the two variables hinges on the host country's trade regime. On top of this, majority of studies ignored the possibility of a bi-directional relationship between the two.

Literature dedicated to the role of FDI on the growth of the economy shows different effects (positive, mixed and no effects) in different locations. For instance, Agrawal et al. (2011) examined FDI effect on China's and India's economic growth in the period from 1993-2009 with the help of a modified growth model from the basic growth model. The included human capital, labor force, FDI and Gross Capital Formation in their model and ran the OLS regression method. Their findings showed that 1% increase in FDI led to 0.07% increase in GDP in China and 0.02% increase in India. They also revealed that growth in China is more influenced by FDI more than growth in India. Therefore, most foreign investors prefer the former to the latter for investment as it is characterized as having a bigger market size, provides easy accessibility to export market, government incentives, established infrastructure, cost-effectiveness and a climate that is macro-economic.

In Agama's (2010) study, he investigated the effects of exports and FDI on the South Asian countries (Bangladesh, India, Pakistan and Sri Lanka) FDI. He used secondary data dated from 1980-2009 and a simple log linear regression model. His findings revealed that the impacts of exports and FDI are statistically significant and he recommended that South Asian countries' policy makers diversify the exports of their country to extend exports volume and maximize FDI inflows as they have the potential to optimize their growth.

In Vietnam, Hoang et al. (2010) focused on the FDI effects on economic growth with the help of a panel data model employed throughout the 61 provinces of Vietnam for the years 1995-2006. Their findings indicated a significant and positive impact of FDI on Vietnam's economic growth as a way of increasing capital stock. In Vietnam, human capital and trade are not the channels that give way to advanced technology and knowledge transfers from the FDI inflows. In a related study, Mallick and Moore (2008) attempted to provide an estimation of the endogenous growth model with the help of panel data obtained from sixty developing nations for the years 1970-2003. They revealed that FDI inflows positively and significantly impact economic growth throughout all income groups. They also showed that the indirect impact of FDI on economic growth via their contribution to investment could lessen in the lower income group countries.

Moreover, Chang (2007) employed the ADF test, the Peron test and Divot and Andrew's unit-root test to examine the stationary state of the variable in the context of Taiwan. He also made use of Johansen's co-integration test, the multivariate error correction model as well as the Granger causality test and found no causal relationship between FDI inflows and the growth of the economy. Similarly, Ghatak and Hlicioglu (2006) stressed on FDI and economic growth in countries around the world for the period spanning from 1991-2001. They generated fresh insight into the relationship between the two variables obtained via single-equation and simultaneous equation estimates from 140 nations employing macro-economic variables. According to their findings, a positive and statistically significant estimate of FDI coefficient exists, that was gathered from single equation ordinary least squares method for real per capital GDP regressions in the entire cases except one. They also found a positive and statistically significant relationship between real per-capita GDP and FDI in many countries although the correlation coefficient between exports-GDP ratio and percentage FDI showed an insignificant relationship.

In another related study, Falki (2009) studied the effect of FDI on economic growth in the context of Pakistan for the years 1980 to 2006. He used the production function based method on endogenous growth and found a negative and insignificant link between GDP and FDI. He recommended developing the following – infrastructure, human resource, and investment environment.

In a related study, the flexible relationship between GDP, FDI, and export of India, Chile, Pakistan, Mexico, Malaysian and Thailand were examined by Minakhel, Thangavelu and Kalirajan (2009) involving data gathered for 36 years from 1970 to

2005. The results showed that in South Asia, export leads to growth but in the long-run, the GDP growth is the common factor influencing the exports growth in Pakistan and FDI in India. On the other hand, Mexico and Chile displayed different relationship in the short-run but in the long-run, the same scenario exists. The study showed bi-directional long-run linkage among exports, FDI and GDP in the context of Malaysian, whereas in Thailand, a long-run uni-directional relationship originates from GDP.

Along similar line of study, Salman and Feng (2009) documented the effect of FDi on the agricultural, industrial and service sector growth pattern in Pakistan over a decade (2000-2009). The Government's executed economic and investment policies showed a significant increase with FDI inflows. Also, Firebaugh (2010) reported that foreign investment negatively impacted poor nations. He focused on the coefficient of foreign capital stock and controlled for new investment. His findings inferred that a negative coefficient exists for stocks reflecting dependency effects that barred economic growth. Because the denominator of investment rate is capital stock, the greater the stock, the lower is the rate of investment for a certain level of new investment. Data analysis employed in dependency studies revealed negative coefficient of capital stock – indicating a beneficial investment effect as opposed to a harmful one.

In addition, the effect of FDI on GDP was studied by Farkas (2012) with the help of regression analysis. His results showed FDI's positive relationship with GDP – the impact hinged on the absorptive capacity of the host country, human capital level and financial markets development.

In the context of the MENA countries, Hammed and Bashir (2012) observed the impact of FDI on GDP through an econometric model. They reached the conclusion that FDI results in economic growth although this effect based on region and over a period. They also revealed that FDI is impacted by two factors namely domestic investment and openness towards international business.

In Nigeria, Onakoya (2012) sought to determine the FDI effect on GDP on various sectors of the country through the three-stage least square (3SLQ) method and macro econometric model of simultaneous equation. He reported that FDI impacts GDP in terms of economic output. In the context of Pakistan, Zeeshan and Antique (2012) the FDI-GDP relationship was examined via Douglas Production function and regression equation employed on data gathered for the years 1971 to 2001. The authors reached to the conclusion that the impacts of imports substitution and exports oriented economies are different and they supported Bhagwati's hypothesis indicating that FDI spillover effect is higher in the latter than the former economy.

Meanwhile, in Vietnam, Tue Anh et al. (2010) examined the FDI spillover effects on the country's economy with the help of an endogenous growth model. The results showed little evidence of FDI spillover effects at the micro level. Similarly, the impact of FDI on trade and economic growth in 66 developing countries was sought by Makki and Somwaru (2009) upon trade and economic growth through cross sectional data. They reported the positive interaction of FDI with trade and its promotion of domestic investment. They also reached to the conclusion that effective policies coupled with stability are pre-requisites of FDI's boosting of GDP rate. The results were obtained through econometric model for production function.

In Malaysia, Karimi et al. (2009) employed the time series data obtained for the years 1970-2005 and the Toda Yarn Moto test to examine the causality effect on the relationship and bounds testing (ARDL). They reached to the conclusion that FDI does affect GDP. In a related study, Noormamode (2008) sought to determine the effect of FDI on economic growth and examined the host country's social and economic conditions with regards to the spillover effects from the FDI. They employed a VAR model and the results revealed no evident growth effects of FDI. Such endogenous relationship between the two variables was also examined by Turk et al. (2008) via panel data of 23 OECD nations for the period from 1975 to 2004. Accordingly, they made use of two simultaneous equations along with generalized methods of moments and concluded that both factors impacted the economy, with FDI contributing significant to the expedient growth of GDP rate and with GDP determining the FDI level in majority of cases.

Moreover, the causal relationship between FDI and economic growth in the context of ASEAN nations including Indonesia, Malaysia, Thailand, Singapore and the Philippines in the period from 1970-2007 was examined by Pardhan (2009). He found a bi-directional causality between the two variables in all countries' economic growth with the exception of Malaysia. On the other hand, Meerza (2009) studied the relationship among trade, FDI and economic growth in Bangladesh with the help of data covering the time period from 1973 to 2008. He utilized the Johansen co-integration test and Granger causality test to the data and revealed long-run relationship among the variables, with the Granger causality test showing causal relationship among them.

In other studies, Azam and Lukman (2010) looked at the many economic factors related to economic growth effects on FDI in three countries namely Pakistan, India and Indonesia. They used data obtained for the time period 1971-2005 and exposed it to the OLS and Log Linear Regression model. The results highlighted the crucial determinants of market size, external debt, domestic investment, openness of trade and physical infrastructure. Similar results were obtained for Pakistan and India (with the exception of trade openness and government consumption) whereas in Indonesia, the determinants results of FDI differed from those of the two former countries. Added to the above, Samimi et al. (2010) concentrated on OIC countries and examined the role of FDI in their economic growth with the help of panel data for the period from 2000-2006. The panel regression approach revealed that FDI and openness positively add to the growth performance of OIC countries. Also, a dynamic interaction was found between domestic investment, FDI and economic growth by Ullah, Shah and Khan (2014) in Pakistan for data obtained for the period from 1976-2010. They used the PP test for the assessment of unit root in the data series, the Johansen co-integration approach to examine the long-run relationship and Toda-Yamamoto causality approach to evaluate causal relationships. The study's findings showed the existence of long-run linkage between domestic investments, FDI and economic growth as obtained by the Toda-Yamamoto causality and a bi-directional causality between FDI and domestic investment. These indicate that domestic investment and FDI cause each other.

In a more current related study, Seyoum, Wu and Lin (2014) examined the Granger causal linkage between FDI and economic growth (GDP growth) with the help of

annual balanced panel data for 23 African countries for the years 1970-2011. They also used a developed panel econometric method that takes non-stationary and cross-section dependency into consideration in the dataset upon analyzing the growth-FDI relationship. According to their empirical results, the two-way Granger causality link between FDI and economic growth is non-homogeneous among individual countries. It was also observed that a uni-directional causality exists from FDI to GDP growth in the context of Egypt, Gabon and Mauritania, the opposite in Coat d'Ivoire, Kenya, South Africa as well as Zambia. Their findings estimated between FDI as a fraction of gross capital formation and real GDP growth.

Similarly, Iqbal, Ahmad, Haider and Anwar (2014) in Pakistan they collected 30 year data from 1983-2012 after which Cobb-Douglas Production function was employed for relationship testing. The research variables comprised Gross Capital Formation (K), labor (L), health expenditure (H), FDI and openness to trade in export oriented economy (OP*FDI), following Bhagwati's hypothesis that FDI greatly impacts GDP in case of export-oriented economy. The reach to the conclusion that FDI impact may be related to the situation or culture and therefore, the level of FDI economic benefits is unpredictable, where taking part in defensive outward FDI is deemed to be less beneficial to innovation growth compared to the expansionary outward FDI, and simultaneously to the defensive and expansive outward FDI.

In a current study, Volos, Kyprianidis and Stouboulos (2015) explained that in this era of a globalized economy, the most crucial factors for economic growth of a country, particularly a developing country include the FDI. This is because of the

capital and technology transfer. In their work, they explained the impact of FDI on the economic growth of a country through non-linear dynamics. Specifically, they employed an extensively known non-linear discrete-time dynamical system namely the Logistic map. The system they studied comprised of two countries having a significant economic relationship, where the source country of FDI is an industrialized, economically powerful and technology advanced nation that invests in the host country. Meanwhile, the latter is a developing country that strongly depends on the source country. The results of simulation of the system's behavior in the form of bifurcation diagrams showed significant relationship between countries of the proposed system and the impact of FDI on the host country's economic growth.

In the context of Ghana, Adam and Tweneboah (2009) investigated the FDI behavior in the country's growth model for the years 1991-2006. The findings showed FDI's positive promotion of Ghana's economic development. Similarly, Abbas et al. (2011) studied the impacts of FDI on the degree of domestic production of SAARC member countries and revealed that the growth model significantly and positively related with FDI and the countries' output level. In a related study Ray (2012) employed data for the years 1991-2011 and the co-integration method. He reported evidence of FDI's contribution to the enhancement of economic growth in the long-run in India.

In a related study, Abdul and Morris (2011) explored the relationship between ease of doing business and FDI inflow to the Sub-Saharan Africa and Asian countries. They found two factors namely registering property and trading across borders to be related to FDI throughout the six years of study (2000-2005) for the combined

sample. They also found several factors' relationship with FDI received by SSA and Asian countries throughout the years. Moreover, Singh & Singh (2011) examined the FDI inflow trend and prospects in India for the years 1970 to 2007 with the help of time series data. Their study aimed to determine the reasons behind the fluctuations of the FDI inflow in India. Similarly, Singh & Bhatnagar (2011) focused on India and China's FDI in a comparative analysis. They revealed that while China and India both enjoy healthy economic growth rates, the FDI inflow is higher in the former than the latter.

Added to the above studies, Agarwal and Khan (2011) conducted a study on FDI and its impact on GDP in the context of India and China. They revealed that a 1% increase in FDI would increase Chinese GDP by 0.07% and GDP of India by 0.02%. They also revealed that FDI influences the former's growth rather than the latter. Meanwhile, Saini, Law and Ahmad (2010) focused on the relationship between FDI and economic growth and the role of financial markets. They stated that FDI positively impacts growth in cases where the development of financial market goes over the level of threshold and until that happens, FDI benefits are non-existent. In this regard, Gubbi, Aulak, Ray, Sarkar and Chittoor (2010) claimed that international acquisitions bring about internalization of both tangible and intangible resources that are challenging to trade via transactions and that takes time to internally develop and hence playing a role as a significant strategic impetus to create value for firms in emerging economies. Such contention was supported by 425 cross-border Indian firms acquisitions in the period from 2000-2007.

Meanwhile, Singh (2010) focused on economic reforms and FDI in India with regards to the country's policy, trends and patterns. They highlighted the increasing competition among nations and sub-national entities role in attracting FDI to conduct an analysis of the emerging trends and patterns of FDI inflows into India in reaction to several policy measures established by the Indian Government since mid-1980s onwards. Their empirical analysis findings indicated that FDI inflows generally display an increasing trend over the post-reform period. Added to this their country-wise comparison of FDI inflow revealed that such inflow into India has significantly increased compared to other developing nations in the past few years. This study shows that the FDI inflows into India positively reacted to the measures liberalizations launched in the 1990s.

Meanwhile, Gudaro et al. (2010) provided an estimation of the FDI impact on economic growth with the help of 30 observations for the years 1981-2010. Their findings showed that FDI and economic growth of Pakistan during the study period are significantly and positively related. Also, Ahmed et al. (2012) conducted a study to determine the relationship between FDI and economic growth in Pakistan and used the annual data and the econometric method of co-integration and error correction model. In their study, the dependent variable was gross domestic product while the independent variables were the FDI, labor force and domestic capital. Their findings showed a positive relationship between FDI and gross domestic production in both short and long run. They suggested that in order to facilitate economic growth, foreign investors should be invited, as increased FDI increases gross domestic production, which in turn facilitate the country's economic growth.

Finally, Sumon (2014) shed a light on the dependence of Bangladesh's gross domestic product on FDI, external debt and remittance on the basis of annual data gathered for the years from 1986 to 2013. Data was analyzed through advanced econometric tools including unit root test (ADF and PP), OLS methods and Granger causality test. Both FDI and remittance were found to positively relate to GDP, while external debt negatively influenced GDP. In an effort to lessen the gap between domestic saving and investment and to facilitate technology and managerial knowledge, FDI could have a major role to play on Bangladesh's economic development.

3.3 FDI and Endogenous Growth

In the context of endogenous growth, the first analysis of the effects of FDI was in 1998, it was performed by Borensztein. E, De Gregorio.J and Lee. JW. These authors seek to test the effect of FDI on economic growth in a context of cross-country regression, using data on FDI flows from industrial countries and 69 developing countries in the two decades. The results suggest that FDI is an important vehicle for technology transfer, contributing to the relatively more than domestic investment growth. However, the higher productivity of FDI only applies when the host country has a minimum threshold stock of human capital. Moreover, FDI has the effect of increasing the total investment in the economy more than one for one, suggesting the predominance of complementarity effects with domestic companies (Journal of International Economics, 1998).

In another article published in 2003, Blomstrom and Kokko noted the importance of multinational firms in higher education, they show that FDI could have a significant impact on higher education in the host countries through increased labor demand; this will push governments to invest more in training and education.

In a more recent study, which covered 67 developing countries, Hermes and Lensink (2003) found a negative impact of FDI on growth. However, this effect becomes positive when the FDI variable is combined with the enrollment rate or variable describing the financial market.

Using the same logic, Durham (2004) and Alfaro et al. (2004) examined the trilogy: efficiency and regulation of FDI financial- market - and growth. They find that countries with a better system and better regulation of the financial market are better placed to exploit more effectively the FDI and achieve higher growth rates.

3.4 Conclusion

We can sum up from the previous literature review that economic growth which refer to Gross Domestic Product (GDP) have effected by a various of variables with a different direction, positive, negative and no sign effect. The empirical studies provide a good discussion platform but without a single confirmation for study variables and their effect on economic growth.

The above literature review gave different examples of how capital, labor, gross fixed capital formation and foreign direct investment play significant determinants for accelerating economic growth. However, most studies done about Algeria just

focus on the relationship between import and export movements, balance of trade, balance of payment and foreign direct investment using qualitative method or simple quantitative methods.

In general, the study tries to cover a main and most variables using advance methods like causality tests and co-integration tests.

CHAPTER FOUR

DATA AND METHODOLOGY

4.1 Introduction

This chapter presents the data and methodology of the present study. The sources of data, variables, model specification and estimation methods are described, in particular, the data and methods used to estimate the impact of foreign direct investment on economic growth.

4.2 Data

In this paper, the data has collected from different sources: Office for National Statistics Algeria (ONS), World Bank (WB), International Monetary Fund, International Financial Statistics (IMF), and United Nations Conference on Trade and Development (UNCTAD).The collected data is for the namely variables: gross domestic product Gross Domestic Product per capita (GDP, current LCU), foreign direct investment (FDI, current LCU), gross fixed capital formation (GFCF, current LCU) Capital (K, current LCU), and Labor force, total (L). The available data arranged in annual time series for the period 1990 to 2013 and in current Local Currency Unit (LCU). The definition and measurement of the variables will be explained in the following section.

4.3 Model Specification

The model specification under this study had derived from the theory of growth model; the last functional model can capture the relationship between the variables which aim to examine in this model study. So the study concentrates to illustrate on the relationship between Foreign Direct Investment (FDI) and Economic Growth (GDP). The development of the endogenous growth theory on the relationship among capital, labor and Gross Fixed Capital Formation variables and economic growth, attracts the academic researchers in investigating for the direction of impact between the variables and economic growth on one hand; and between foreign direct investment and economic growth on the other hand. Carkovic and Levine (2002) and Li and Lin (2004) for instance. In Their study on Foreign Direct Investment and economic growth used of endogenous growth theory.

Several economic factors (human capital, capital accumulation, international trade and government policy), which according to the theory of endogenous growth explain the long-term growth can be carried by the FDI .The FDI is assumed; stimulate growth, the creation of dynamic comparative advantages leading to technology transfer, the accumulation of human capital and the intensification of international trade (Bende et al. 2000; and OECD, 2002). These dynamic advantages, often known spillovers, are bonded to each other, complementary, and should not be considered separately. Indeed the gain generated by the IDE on a growth factor can stimulate the development of other factors, forming a kind of synergy (Bende et al. 2000). Same at this study which include other variables in the

model to avoid some econometric phenomena in term of omitting some relevant variable should be in the equation of the model studied which in the end lead to spurious results. (Saleem Khan, 2015), (Kahnamoui.F, 2013), (A.M.M Mustafa, S Santhirasegaram, 2013), (Ehimare O.A, 2011), (Uremadu Ofumbia S, 2009), (Mohey –up din, (2006), (Osinubi T.S.and Amagbionyeodiwe L.A, 2005).

Then, based on the theory of growth and literature, the following model is specified as: $Y = f(K, L, FDI, GDI)$ (1)

where:

Y = gross domestic product GDP per capita (current LCU),

K = capital (current LCU)

L = Total labor force.

FDI = foreign direct investment, and

GFCF = Gross Fixed Capital Formation.

The functional model shows the relationship among the variables of this research, and then it can be take the follow form as:

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + + \varepsilon_t$

where:

Y = Gross Domestic Product

X_1 = Foreign Direct Investment

X_2 = Gross Fixed Capital Formation

X_3 = Capital

X_4 = Labor force

ε = stochastic error term.

The definition of the variables under this study is given as follow:

Foreign Direct Investment (FDI current LCU)

According to the World Bank, it defines the Foreign Direct Investment as the ensemble of **equity** capital, reinvestment of earnings, other long term capital, and short term capital as shown in Balance of Payments.

GDP per capita (current LCU)

According to the World Bank, it defines the GDP per capita as gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current local currency.

Total labor force

Total labor force comprises people ages 15 and older who meet the International Labor Organization definition of the economically active population: all people who supply labor for the production of goods and services during a specified period. It includes both the employed and the unemployed. While national practices vary in the treatment of such groups as the armed forces and seasonal or part-time workers, in

general the labor force includes the armed forces, the unemployed and first-time job-seekers, but excludes homemakers and other unpaid caregivers and workers in the informal sector.

Gross Fixed Capital Formation (GFCF current LCU)

GFCF is an indicator derived from the Congolese national accounts. This aggregate (that is to say that the GFCF is the result of the sum of different elements) measures the annual flow of investments in the country. Gross fixed capital formation is the sum of investments, primarily materials, made during the year on the Congolese territory and it is formerly gross domestic fixed investment. On the economic front, the investment material is the purchase of durable goods to increase the company's capital stock. It often consists of the purchase of machinery or buildings, these machines and buildings for the purpose of contributing to the production of goods and services. Homes purchases are investments because, for example, an apartment can produce a service, that of housing.

In recent years, the GFCF includes some intangible investments, mainly expenses related to the purchase of software. But the other intangible investments, such as spending on research and development, training or those of those of advertising, still recognized as expenses of intermediate consumption. Finally, the GFCF is gross because we include equipment replacement costs (or depreciation) that are not strictly investments (since they do not contribute to increasing the capital stock but simply to maintain its level by renewing the old equipment). According to the 1993

SNA, net acquisitions of valuables are also considered capital formation. Data are in current local currency.

4.4 Model Estimation

Multiple regression models is one of the most used tools in the standard analysis. Regression analysis examines the dependency of one variable dependent variable to one or more variable (usually called the explanatory variables or independent variables) and symbolizes the dependent variable as y and explanatory variables as X_1, X_2, X_3…….. X_k.

If k = 1, meaning that there is only one independent variable and the explanatory variables. This means that there is only one x. This is known as a simple regression model.

If k> 2, which means that there are more than x and one independent variable. We get what is known as multiple regression models.

The method of estimation is ordinary least squares (OLS) using the principle of minimize sum of square errors (SSE) to obtain the estimators:

$$\text{minimizes SSE} = \Sigma\, e_i^2 = e_1^2 + e_2^2 + e_3^2 + \text{.....} + e_n^2 = e'e, \text{ n= sample size}$$

The next is to minimize the sum of the squared error terms (SSE). From the term of calculation meaning must to find the critical points of a function which are values of estimators (*b*) that minimize the function. To find that should take a first derivative of

function number (3) with respect to *b* and set it equal to zero (0) and solve for b_o. Then if we follow the estimators of OLS are:

$b_{OLS} = (X'X)^{-1}X'y$

By the classical linear regression assumption, the OLS estimators are BLUE (Best Linear Unbiased Estimator).To avoid the spurious regression problem, we have use unit root test, and co-integration test if unit root exists.

4.4.1 Unit Root Test

Stationarity of time series is considered as the first step before to proceed to any estimation. In order to avoid any spurious regression the time series data should be tested.in case of non-stationary in series the problem of spurious regression.

Given that not all the time series can be well represented by a first-order autoregressive process, Dickey-Fuller unit root test was further expanded to handle the higher order autoregressive processes. It was call Augmented Dickey Fuller because of its capacity to illuminate a possible autocorrelation problem in the disturbance errors by augmenting extra lagged differenced terms. This was necessary because the Dickey Fuller test could not have been valid in the presence of auto-correlated disturbance errors, and this made it to be the best test option.

The ADF is based on the regression equation with the inclusion of a constant and time trend. In general, the main equation for the ADF test takes the following form (Gujarati, 2009):

$$\Delta x_t = \beta_1 + \beta_2 t + \delta x_{t-1} + \sum_{i=1}^{n} \alpha_i \Delta x_{t-i} + \varepsilon_t \qquad (4.1)$$

where x_t = variables of interest in the logarithm forms at time trend t, Δx_{t-i} expresses the first differences with *k* lags. The Schwarz Bayesian Criterion (SBC) and Akaike Information Criterion (AIC) are used to determine the optimal lag length *k*. The number of lagged difference terms to include is often determined empirically. The idea is to include enough terms so that the error term in equation (1) is really uncorrelated. ε is the white noise residual of zero mean and constant variance. The coefficients ($\beta_0, \beta_2, \alpha_1, \ldots\ldots\ldots\ldots, \alpha_k$) are parameters to be estimated. The null and the alternative hypothesis for the existence of unit root in variable x_t is expressed below:

H_0: $\delta = 0$ (x_t is non-stationary or contain a unit root)

H_1: $\delta < 0$ (is stationary or non- unit root)

The null hypothesis of unit root test is that the series are non-stationary. In this study, we choose AIC (Akaike Information Criterion) to choose the optimal lag length *(k)*. Then, if the value of AIC (Akaike Information Criterion) is greater than t-statistic and the probability (p-value) is less than the level of significance; we can reject the null hypothesis. Likewise, if the estimated value of δ is significantly less than zero we reject the null hypothesis $\delta = 0$ and the series is stationary. On the other hand, if

we cannot reject the null hypothesis, it means that the time series have a unit root process or non-stationary.

The next test for testing unit root is the Phillips Perron (PP) unit root test. The PP test uses a nonparametric statistic method to take care the serial correlation in the error terms without lagged first differenced terms. The asymptotic distribution of the PP test is the same as the ADF test statistic i.e. same critical value can be used (Gujarati, 2009). Therefore, these two tests are conducted in this study to ensure that the variables are really stationary.

4.4.2 Co-integration Test

A long-run relationship between tow variables is referred to as integration when these variable share common trend. Such relationship is usually expressed as an equilibrium relationship in these variables. Put more succinctly, two stochastic variables such as X_t and Y_t are co-integrated when the linear mixture of them exists with the integrated order say d. this implies that $X_t \sim I(d)$ and $Y_t \sim I(d)$. Thus, X_t , $X_t \sim CI(d,d)$. The combination may be written as $\alpha_1 Y_t + \alpha_2 X_t \sim I(0)$, where CI is a notation for co-integration. The combination of (α_1, α_2) is called co-integrating vector. It should be noted that $d \geq 0$.

Let's look at the relationship when $Y_t \sim I(1)$ and $X_t \sim I(1)$ may be expressed as

$$Y_t = \beta_0 + \beta_1 X_t \qquad (4.2)$$

The equation (4.1) is the long-run relationship we stated earlier. We call it long-run equilibrium relationship because $0= Y_t - \beta_0 + \beta_1 X_t$ (4.3)

Thus, any non-zero value in RHS of equation (4.2) would represent equilibrium error which is denoted as $\varepsilon_t = Y_t - \beta_0 - \beta_1 X_t$ (4.4)

The long-run equilibrium makes sense only when equilibrium error moves around zero mean. This implies that $\varepsilon_t \sim I(0)$ with $E(\varepsilon_t) = 0$. Following our above discussion,

Y_t and X_t are co-integrated of order (1,1) while our co-integrating vector is $(1 - \beta_0 + \beta_1)$. It implies the linear combination of Y_t and X_t is unique since the equilibrium error εt is stationary with zero mean. We can represent such a linear combination thus: $Y_t \beta_0 + \beta_1 X_t$ (4.5)

The combination of is devoid of producing spurious regression since ε_t is stationary (Stock,1987). The co-integration study may be extended to more than two variables.

The Engle and Granger test have two steps. Using OLS to estimate co-integration and using ADF tests for residuals of the regression. If we found that there is unit root or non-stationary in residuals we reject the null hypothesis of no co-integration and vice versa.

Although this approach is an improvement over simple correlation coefficient analysis, it has been shown to be weak in modeling multivariate cases because it: i) is sensitive to the choice of endogenous variables in the co-integrating regression; ii) makes a priori assumption of a single co-integrating vector in the system; and iii) tends to yield biased parameter estimates in small samples (Banerjee, et al 1990).

4.4.3 Granger Causality Tests

To determine causal relationships, there are different tests, the most famous are those of Sims (1972), and Pierch Haugh (1977) and finally a third which follows from the definition of Granger and which was applied for the first time by Sagent (I976). However, only the latter responds to our concern because it is the only are applicable in the multivariate case. For brevity we will present this test only for the case of three variables, the other cases being fairly ease reconstitute it from it. If all of that is available information is reduced to only the variables studied ($\{X_t, Y_t, Z_t\}$ stationary) test the non-causal X_t, Z_t to Y_t, being given back to estimate equation:

$$Y_i = \alpha + \sum_{i=1}^{p} \beta_i Y_{t-i} + \nu_{1t}$$

The test has a root in time series in presuming that the best way to predict Y is to rely on past value of Y (i.e. autoregressive process).

Let add the lagged value of X:

$$Y_i = \alpha + \sum_{i=1}^{p} \beta_i Y_{t-i} + \sum_{i=1}^{p} \delta_i X_{t-i} + \nu_{1t}$$

The Question rose: Does the prediction of Y improves by adding lagged X.

If Yes, then we say X Granger causes Y.

If No, then X does not Granger cause Y.

Bivariate Setup:

$$\boldsymbol{Y_i = \alpha + \sum_{i=1}^{p} \beta_i Y_{t-i} + \sum_{i=1}^{p} \delta_i X_{t-i} + \nu_{1t}}$$

$$\boldsymbol{X_i = \phi + \sum_{i=1}^{p} \theta_i Y_{t-i} + \sum_{i=1}^{p} \varphi_i X_{t-i} + \nu_{1t}}$$

Hypotheses:

Hypothesis 1

$H_0 : \delta_1 = \delta_2 = ... = \delta_p = 0; H_a$: At least one δ is not zero.

Hypothesis 2

$H_0 : \theta_1 = \theta_2 = ... = \theta_p = 0; H_a$: At least one θ is not zero.

Pattern of Causation:

H1 and H2 don't rejected → X and Y are causally independent.

H1 rejected, H2 don't rejected → X causes Y

H1 don't rejected, H2 rejected → Y causes X

Both rejected → Bi-directional causality

CHAPTER FIVE

RESULTS

5.1 Introduction

In this chapter, using Eviews program, the multiple regression models are estimated and the tests are performed for GDP, FDI and GFCF models in order to examine the short run relationship and to assess the short run causality for Algeria country.

5.2 Unit root and Cointegration tests

Table 5.1 presents the results of unit root test for the variables. By ADF and PP unit root test, FDI and GDP are found to be stationary at first different I(1) and GFCF, K and L are still non-stationary even at first different. However, K and L are found to be I(1) using KPSS test, a complimentary test to ADF in case of fractionally integrated series, This implies that the study can proceed to the test of cointegration.

Table 5.1 Unit Root test

Variable	LEVEL(I0)		FIRST DIFFERENT I(1)		
	ADF	PP	ADF	PP	KPSS
FDI	-2.39	-2.39	-5.50***	-5.50***	
GDP	-1.31	-0.88	-5.12***	-12.98***	
GFCF	0.77	0.51	-3.04	-2.41	0.55**
K	1.21	2.69	-3.18	-2.38	0.14*
L	-2.97	-2.29	-2.47	-2.54	0.13*

Note: we use the trend with ADF, PP and KPSS

Table 5.2 shows the results of co-integration test. It indicates that the co-integration exists among the variables of GDP, FDI, GFCF, L and K this implies that the

spurious regression problem is not exist and we could proceed to the multiple regression model estimation.

Table 5.2 Co-integration test

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.97028	185.172	88.8038	(0.000)
At most 1 *	0.934136	107.8212	63.8761	(0.000)
At most 2 *	0.604143	47.97745	42.91525	0.0144
At most 3 *	0.568304	27.58998	25.87211	0.0303
At most 4	0.339037	9.109256	12.51798	0.1737

Trace **test indicates 4 co-integrating eqn(s) at the 0.05 level**
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Co-integration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.97028	77.35088	38.33101	(0.000)
At most 1 *	0.934136	59.8437	32.11832	(0.000)
At most 2	0.604143	20.38748	25.82321	0.2216
At most 3	0.568304	18.48072	19.38704	0.0673
At most 4	0.339037	9.109256	12.51798	0.1737

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

5.3 Multiple regression models

Three models are estimated: model 1 (GDP as dependent variable); model 2 (GFCF as dependent variable) and model 3 (FDI as dependent variable). Table 5.3 presents these estimated models.

Table 5.3 The estimated multiple regression models

Variable	Model 1 (GDP)	Model 2 (GFCF)	Model 3 (FDI)
Constant	-165951.7 (0.00)***	8.84E+10 (0.8494)	-2328.848 (0.1482)
GFCF	-1.96E-08 (0.48)	-	6.65E-11 (0.9359)
FDI	-0.749565 (0.92)	5257832 (0.9359)	-
K	5.27E-08 (0.03)**	0.887296 (0.000)***	9.52E-11 (0.9032)
L	0.027765 (0.00)***	-1164.858 (0.9866)	0.000329 (0.1729)
GDP	-	-1350175 (0.4807)	-0.000652 (0.9242)
R2	0.986012	0.994658	0.777389
Adj-R2	0.983067	0.993534	0.730524
F test (P-value)	(0.000)	(0.000)	(0.000005)
BG Serial correlation test (P-value)	(0.705)	(0.0838)	(0.0872)
J-B Normality test (P-value)	(0.107865)	(0.917248)	(0.917248)

Note:

1. Values in parenthesis are p-values of the t-test;
2, ** and *** represent significant at 5% and 10% level respectively.

5.3.1 Model 1: (GDP Model)

From Table 5.3, capital (K) and labor (L) have found to have significant and positive effects on GDP, at 5 percent and 1 significance level, respectively. Quantitatively, it is observed that for every 1 Dinar Algerian (DA) in K, GDP increase by 5.27E-08. GFCF and FDI have negative impacts on GDP, however, these negative impacts are not significant.

Furthermore, it is noticeable from the Model 1 that the GDP model has high good of fitness with the R^2 of 0.98 and the overall fit of the estimated model is found to be significant at 1 percent significance level. In addition, it indicates that GDP model don't suffer from serial correlation problem. Moreover, according to the Model 1 there is no normality distribution problem on GDP model.

5.3.2 Model 2: (GFCF Model)

Similarly, in Model 2, the GFCF and FDI still found to have negative but insignificant impacts on GDP. The Model 2 shows that only capital (K) has significant positive effect on GFCF, at 1 percent significance level, respectively. In addition, it is observed that for every 1 Dinar Algerian (DA) in K, GDP increase by 0.88 DA.

Furthermore, it is noticeable from the Model 2 that the GFCF model has high good of fitness among the variables $R^2 = 0.99$ with significant probability of (F- statistic), at 1 percent significance level. In addition, the model 2 at table indicates that GFCF

model don’t suffer from serial correlation problem.at 5 percent level. Moreover, according to the table Model 2 there is no normality distribution problem on GFCF model.

5.3.3 Model 3: (FDI Model)

After running FDI model using Least Squares Method. The Model 3 shows that capital (K), labor (L) and GFCF have insignificant positive effect on FDI. However, GDP has negative effect on FDI in Algeria but insignificantly. Furthermore, it is noticeable from the Table 5.3 that the FDI model has high good of fitness among the variables R^2 = 0.77 with significant probability of (F- statistic), at 1 percent significance level.In addition, the Model 3 indicates that FDI model don’t suffer from serial correlation problem.at 5 percent level. Moreover, according to the Model 3 there is no normality distribution problem on FDI model. This results have consist with same findings by Saltz, I. (1992) Mencinger (2003) Falki (2009) and Saqib et al. (2013).

5.4 Granger Causality

The table 5.4 shows the Short run Granger causality results, it is observed that FDI and Labor Granger cause GDP. However, K and GFCF don’t Granger cause GDP. Moreover, GFCF Granger cause FDI, while GDP, K, L doesn’t Granger cause FDI.
In addition, K and GDP Granger cause GFCF, while FDI and L don’t Granger cause GFCF in the short run estimation. Moreover, GDP Granger cause K and L, FDI and

GFCF don't Granger cause K. In addition, GFCF Granger causes L while GDP, K and FDI don't Granger cause L in the short run estimation.

Table 5.4 Granger Short Run Causality

Null Hypothesis:	Obs	F-Statistic	Prob.
GDP does not Granger Cause FDI	22	0.68	0.52
FDI does not Granger Cause GDP		3.14	0.07*
GFCF does not Granger Cause FDI	22	3.10	0.07*
FDI does not Granger Cause GFCF		0.23	0.79
K does not Granger Cause FDI	22	1.08	0.36
FDI does not Granger Cause K		1.01	0.39
L does not Granger Cause FDI	22	1.56	0.24
FDI does not Granger Cause L		2.54	0.11
GFCF does not Granger Cause GDP	22	0.61	0.55
GDP does not Granger Cause GFCF		8.87	0.00***
K does not Granger Cause GDP	22	0.95	0.41
GDP does not Granger Cause K		3.33	0.06*
L does not Granger Cause GDP	22	4.75	0.02**
GDP does not Granger Cause L		0.65	0.53
K does not Granger Cause GFCF	22	4.85	0.02**
GFCF does not Granger Cause K		0.63	0.55
L does not Granger Cause GFCF	22	1.05	0.37
GFCF does not Granger Cause L		2.86	0.08*
L does not Granger Cause K	22	0.53	0.60
K does not Granger Cause L		2.04	0.16

Note: ***, ** and * represent significant at 1%, 5% and 10% level respectively

CHAPTER SIX

DISCUSSIONS AND CONCLUSION

6.1 Introduction

The final chapter, we conclude up the main findings and discuss the implications of these findings, especially, how the policy makers of Algerian can use the findings of the present study. This chapter also contains the limitations of this study plus the suggestions for the future research.

6.2 Major Findings and Policy Implications

This paper investigates empirically the relationship between the FDI and GFCF, and their contribution into the entire economy of Algeria from period 1990–2013. In particular, this paper contributes to the previous literature in several ways. Especially, when there is a lack of researches done about Algeria plus most available studies does not rely to the econometric methods such as causality test that allow us to determine the direction of causality in the short run.

FDI has insignificant negative impact on GDP. Which, mean that there is insufficient evidence that FDI has contributed to economic growth in Algerian economy during the period of 1990-2013 (Long run). This result is consistent with the previous studies, namely, Saltz (1992), Mencinger (2003), Falki (2009) and Saqib et al. (2013). Nevertheless, in short run, there is a weak statistical causality effect from

FDI to economic growth. This implies that in long run, FDI does not significant influence the economic growth of Algerian; but in short run, to some extent, FDI is able to influence the economic growth.

Algeria economy relies too much on petroleum sector, which dominates the economy. Algeria's economy is heavily reliant on revenues generated from its hydrocarbon sector, which account for about 30% of the country's gross domestic product (GDP), more than 95% of export earnings, and 60% of budget revenues, according to the International Monetary Fund (IMF). That’s why FDI not able to contribute nicely into local Algeria economy.

As a result, the empirical results of this study point to review and examine the economic acceleration and may also assist to heal the local economy by the policy makers. Currently, the policy makers could rely on FDI to stimulate the economic growth in short run; in long run, the FDI is not the influential factor. Thus, the present study shows the factors influencing the economic growth of Algeria. Besides that, this can allow the country to revise the economic status and picked the best and effective combination of solutions.

Despite, the efforts made by the public economic authorities in activating the relationship between local companies and Algerian FDI. But the results remained below the level of expectations. And it seems that things will get complicated over if

Algeria joints the World Trade Organization which opens the Algerian economy to more competition.

6.3 Limitations of the Study

Due to the resources limitations, even with the focus of covering all the study limitations, this study case still need other limitations as follow:

Firstly, in terms of the sample size of study, it consider as small sample which restricted by the data availability from the period 1990 to 2013. So, the study obtained for each variable chosen in the system is only 22 annual observations. This restriction effect the degree of freedom for the number of variables and lags. In the language of technique, if the study have small sample size its directly lead to effect the accuracy of the obtained results. Moreover, the absence of some favorite and important data may lead to affect the study research. For instance, the study would like to examine and see how the contribution of FDI in each sector into economic growth but unfortunately the data is not available. In addition, the study also aims to use a quarterly data rather than annual data, which may help to capture the relationship in short-run and may give a good framework. Secondly, this study focuses for only few variables. It may be other variables could include to the framework which may lead and give better results. To avoid losing the degree freedom it is taking account the number of variables and lags.

6.4 Suggestion for Future Research

For future research, I would like to put some suggestions. The model of study relies only on some variables which are labor, capital, gross fixed formation capital, foreign direct investment and economic growth. However and from literature review we observed that there several relevant variables which may have a good impact on economic growth. For example exchange rate, human capital, technology, openness, trade, imports and exports, corruption, tax... etc.

The study has only investigated the short-run relationship among the variables in the framework. On other hand, it is occasion for future studies to run the model using another approaches such ARDL, Granger causality based VAR, VECM. The mentioned approaches will give a long-run relationship between the picked variables and their contribution into economic growth.in addition; it is still possible to apply the study among different sector and at one country economy to see which sector can contribute more to economic growth. The same method we can apply using regions. Moreover, both of cases using sectors or regions allow us to do a comparative study. And investigate the contribution of foreign direct investment on economic growth.

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